Timber Tips

Issued to transmit ideas of interest to timber management employees across forest, regional, and station boundaries. We welcome your contributions. If you wish official evaluation or credit for your suggestions, submit them also to the Forest Management Service Center. Mention of a trade product does <u>not</u> constitute endorsement.

INSIDE THIS ISSUE:

Washington Office Forest Management Perspective

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"Folks, this is the first re-issue of Timber Tips since 1972. Timber Tips first came out in 1957–just a few months before I started full time with the Forest Service. Timber Tips came by snail mail a month after being published and was a great way to share valuable field tips and other success stories. Back in the mid '80's, Carl Puuri, National Silviculturist worked with the folks at the Missoula Equipment Development Center and selected some of the best suggestions to reprint for the folks who had not seen the originals. We have revived Timber Tips in digital form now, so enjoy it article by article. If you find it helpful, share it online with some of your friends and your field crews. Some of the same tips I read about 58 years ago still apply today; other tips now apply to technologies that we did not even dream about back then. So enjoy this first issue. And remember, our editors are always looking for good suggestions from you all to share to increase the Forest Service's excellence in timber sale preparation and forest management.

Dick Fitzgerald,
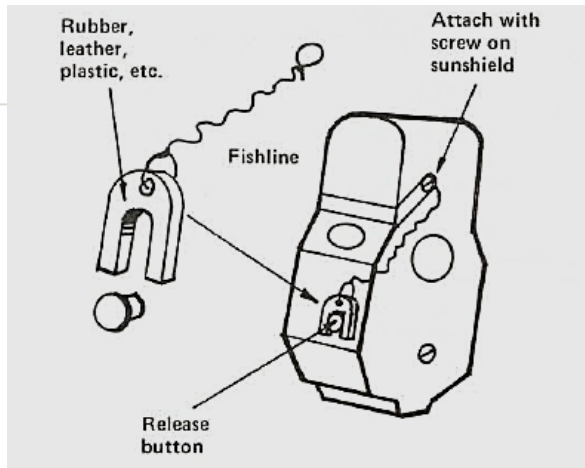Senior Advisor
WO Forest Management

Field-based Tips
(Relaskop)

"Relaskops are easily damaged or broken when the drums accidentally release in your pocket," according to Darcey Goard, Forest Check Scaler at Isabella Ranger Dist., Superior Forest (R-9). This can easily happen when not in the case -- or even when in it. But you can easily modify the instrument to prevent damage -- in either of two ways:

a) Cut a piece of soft rubber to fit the space between the drum release button and the body of the instrument. You'll then need to press extra hard to release the drum.

b) Cut a horseshoe piece of rubber, leather, plastic, etc. to fit the space around the stem of the release button. Remove when using the instrument. Tie with a short fish line to the sun shield screw."

Rudy Hedlund, Don Burge and John Kernick, Timberbeasts all, say "Hooray" to Darcey's idea. They've seen a lot of expense and delay involved in getting damaged & inaccurate Relaskops repaired.
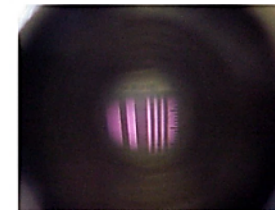

Relaskop View Improvement

If you ever had a difficult time seeing anything clearly though your Relaskop (Relescope), try placing a circle of bright plastic flagging (just like we cruise with) inside the 3 circular windows. Yellow & Lime Green work well, but I prefer "Hot Pink", (skid trail flagging).

The Old Way

The New Way

It is simply a circle of flagging pressed between the inner & outer circular window rings. Now the least bit of light will be highlighted on the white bar portions of your relaskop wheel.

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For an illustrated guide on altering the relaskop window, e-mail Mike Shettles at michaelashettles@fs.fed.us

Click here for more field-based tips!

Field-based Tips
(Tree Marking)

Eyeglass Paint Cleanup

John Holmes (R-9) suggests using a coating of Rainex on eyeglasses before using paint. Paint will not adhere to Rainex's protective film when used on the glasses. This product is available at most auto parts and supply stores.

Another suggestion is to use Uvex polycarbonate goggles made for fire use. These goggles fit over most glasses, and Rainex can be used to protect the goggles as well. The Uvex goggles are inexpensive enough to be considered disposable should they get too much paint on them.

Saved By Safety Pin

"Inside my cruiser's vest I carry three safety pins of various sizes for the purpose of unplugging paint guns. When marking timber or running lines, it saves grumbling and mess, and can make an otherwise gloomy day sunny!", exclaims Paul Pierce of the Menominee State Forest, Mich. Dept. Nat. Resources, Stephenson, Mich.

Panama Pump Paint Saver

Mike Bildeaux, Implementation Team Leader, Deer River Ranger Dist., Chippewa NF (R-9), writes: "A tip I learned from a retired sale administrator for those that use a panama pump is order a few of the smaller diameter lettering nozzles and with that, as always, maintain good pressure in the tank. The small nozzle with good pressure helps a lot with paint conservation and you still get good coverage and longevity on your marks. I use it for CTM, LTM and boundaries. I've seen the biggest benefit is when I have a large unit to layout and I can get a lot further around the unit before I run out. It makes things more efficient."

Check out Panama Pump's website here:

Technology

Laser Rangefinder Use...by Mike Shettles, Forest Biometrician, FMSC

It has been a major point of emphasis for the USFS to increase efficiency as our timber target for this year increases from 2.8 to 3 billion BF with no sizeable increase in manpower. Using time-saving tools such as laser rangefinders has been one proven way to increase sale-prep efficiency. Tasks such as traversing, measuring slope, determining limiting distance or even obtaining tree heights at any given distance from a tree can all be done rapidly with these light-weight devices that easily fit in the pockets your cruiser's vest. You can forget having to go out an exact slope-corrected distance and then find an opening where you can see the top of the tree. With these handy tools, simply go wherever you can get the best view safely, then let the laser do the majority of the work for you. Some models even come with foliage filters that can be attached to the laser allowing cruisers to shoot in dense understory conditions towards commonly available reflective targets, conditions that previously prohibited the use of older models.

At the Measurements Steering Committee meeting in February, a poll was taken from each of the Regional Measurement Specialists of the estimated percentage of field crews using lasers. Figure 1 displays these results. Clearly, some regions (and the BLM O&C Lands) have been successful in getting crews on board, but several regions lag behind. Despite recent efforts by several of the Regions to purchase lasers, many crews are still using older tools and methods such as chain and compass or the breadcrumb method w/GPS for traversing unit boundaries. If you have any questions about using lasers for your cruises, contact your regional measurement specialist.

Region	GPS	FDR	Lasers
1	100	40	100
2	100	50	90
3	90	90	33
4	100	65	60
5	100	85	33
6	95	33	90
8	100	100	50
9	100	55	50
10	100	50	75
BLM (O&C)	100	99	100
Average	99	60	65

Figure 1-Percent of Crews Using Technology by Region

Click here for a USFS publication comparing the precision and accuracy of common laser rangefinder models (includes results for foliage filters).

FMSC-Re-engineered Cruise Software
By the Forest Products Measurement Group

The **National Cruise System** (NCS) is a set of software tools developed by the Forest Products Measurements group at the Forest Management Service Center (FMSC) for timber cruisers to design a timber cruise, collect timber cruise data, and produce statistically defensible volume estimates for timber sale contracts. New versions and packages of this software suite have recently been created and released that address previous issues with data corruption, while also offering many new useful features, all the while being compatible with newer technologies.

In addition to mainstays FScruiser, Cruise Processing and Cruise Design, there is a new member of the NSC suite, Cruise Manager, that contains much of the sale establishment and data management functionality that resided within the previous version of FScruiser. FScruiser Version 2 is now primarily a data collection tool. The following descriptions provide a brief synopsis of each program, it's primary purpose, plus new features for the re-engineered versions.

<u>Cruise Manager</u>- used to establish new sales, customize data entry forms, and handle general data management issues like creating and merging component cruises, modifying cruise designs, and handling data integrity checks.

<u>FScruiser</u>- used for timber cruising field data collection. New features include improved sample selection for both measure and insurance trees, easier multi-strata tallying, real-time auditing, 3P Sure-to-Measure accounting and streamlined cruiser's initials. *See the next page for featured information about this particular program.*

<u>Cruise Processing</u>- the number crunching engine of the NCS suite, this program is used to calculate all of the tree volume expansions, biomass weights and statistics for completed timber cruises with a plethora of reports that can be produced. New features include connection with the National Biomass Estimator Library (available <u>here</u>) for calculating biomass, ability to modify weight factors and merchantability rules, new graphical capabilities, options to create PDF and HTML output , a watermarked PDF feature, clearer report categorization and the ability to create CSV files from select outputs.

<u>Cruise Design</u>- provides an interactive approach to designing a cruise by allowing a cruiser to examine many different cruise methods across many different strata and sample groups using different samples sizes and sale error targets in a relatively short period of time. New features include the ability to use data from historical cruises, insurance tree integration, recon to production cruise comparison, supplemental samples calculations, updated cruising costs and reports showing error by value class.

New FScruiser Feature!

Forest Management Service Center

Click <u>here</u> for user's guides and for the latest versions of the NCS software

FMSC-Re-engineered Cruise Software Cont'd
By the Forest Products Measurement Group

Program Feature: New FScruiser

The old FScruiser was a large application, and had many utilities that are typically only used on the desktop PC in the office. The new FScruiser has been streamlined to be only a field data collection application: mostly data entry with a few key utilities needed while cruising timber in the woods. Where did the utilities go? Into the new Cruise Manager PC application. This is where you will spend your time in the office establishing the cruise design, customizing data entry tables and audit rules, managing component cruises, template files, performing office checks of field data, etc.

Keeping popular features from the first version, the new FScruiser is increasingly stable due to a new SQlite database engine and has many new great features worth highlighting. More about sample selection improvements:

- For sample tree (STR) sample selection, a new selection method called blocked sampling is now used by default, allowing for better sample coverage while avoiding large gaps and clusters of samples that would sometimes result with the default simple random sampling method in the old FScruiser. User's can now also select to use systematic sampling for STR.
- You now have the option of using systematic sampling for both Point, Count-Measure (PCM) and Fixed, Count-Measure (FCM), and can easily set up different systematic sampling frequencies for each sample group. As with sample tree, a random start is used. The state is maintained across plots and cutting units.
- With both blocked and systematic sampling, the sampling "state" (the block plus where you are in the block, or "index") is saved in the cruise file and maintained throughout the population. Changing cutting units or closing FScruiser (or even moving the cruise file to another mobile device) doesn't reset the block … you start where you left off for each population.
- If you choose to use insurance trees for STR or 3P, FScruiser keeps track of them for you.
- A new untally feature allows cruisers to go back and remove erroneous tallies from a list displaying the last 10 tally records.
- For STR and 3P, the interface for tallying into sample groups across multiple strata has been improved.
- FScruiser V2 now audits on the fly, field by field as the data is entered. Audit rules are set up in Cruise Manager and are fine grained … each species – product – live/dead combination can have it's own set of audit rules for measurements such as diameters and heights.
- Accounting for Sure-to-Measure trees in 3P is now much easier.
- Recording cruiser's initials is now easier.

Forest Management Service Center

Click here for user's guides and for the latest versions of the NCS software

Regional Success Story: Using 2-Phased Remote Sensing for Cruising Biomass

By Karen Jones, R3 Measurement Specialist

Recent trends toward removing more low valued biomass or miscellaneous convertible wood products had made traditional types of cruising less cost effective. However, cruising standards still have to be met regardless of the type of products and whether the products are removed as part of a service contract or as a timber sale contract product. Two-Phase sampling using Remote Sensing (2PRS) has been successfully used to cruise biomass for the *Rosemont project on the Coronado NF in Region 3*. During the first phase, estimates of volume per acre are made for many sample plots based on visual clues from aerial photos. In the second phase, a subset of the first phase sample plots are selected for more intensive measurement using a form of unequal probability sampling called *List Sampling*. The center for each fixed-area sample plot is then located and established on the ground and every cut tree on each plot is measured. A predicted to measured volume ratio is then computed and is used to correct the total volume estimate obtained from the first phase sample.
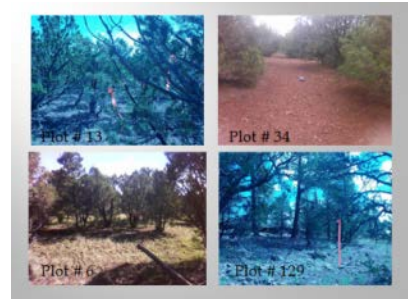

First Phase

For each photo, estimate the Relative Volume Index (RVI). RVI uses a scale between 0 and 100. Higher-volume plots are assigned higher RVI values. For example, the sample plot in the photo on the right (encircled in red) received an RVI of 25.

Second Phase

Select ground plots by comparing a running tally of RVI values to a random number drawn between 1 and the sum of all RVIs. Volumes from these plots are used to establish the predicted to measured correction factor.

The Rosemount project area consisted of even-aged low-valued juniper, oak, mesquite, pinyon pine and cat claw, and was slated to be converted into a mine. There were 341 first stage photo plots and 43 measured ground plots. Even with this sample size and a stand acreage of 3171.20 acres, the **entire cruise only took a crew of two employees four days**, plus one day for learning the 2PRS cruise method. Total volume estimated was 18,376.46 CCF with a 30.00% **sampling error still being met**.

Potential Problems
- This method necessitates high photo resolution
- Works best with recent photo flight dates
- Is best suited for even-aged, single canopy stands where there's only one price for a single product (e.g., $10.50/ton of green biomass)
- Often, relationships used to make first phase estimates, like those between total volume and percent canopy cover, are weak.
- As with all sampling, consistency and a priori knowledge of the stand are essential.
- Navigation to the exact location where a first phase estimate was made is difficult and, therefore, introduces additional error.

Contracts and Appraisals

Revising the National Forest Timber Sale Appraisal Process
By Lathrop Smith, Timber Sale Administration & Appraisals, FMSC
and Rich Aubuchon, Forester-Appraisals, FMSC

Current Situation

The transaction evidence appraisal (TEA) system is the primary method used by the Forest Service to appraise stumpage value in all regions except Region 10. As the FS transitioned to TEA in the late 1980's and early 1990's individual Regions developed their own versions of a TEA. A standardized National TEA was never developed. While many of the TEA's use similar components there are significant differences across the country between the TEA's and the programs to generate them. Despite their differences, all the TEA's rely on a large number of sales and competitive bidding both of which have declined in many appraisal zones across the country since TEA was first adopted.

The TEA method estimates fair market value of timber based on bid rates of past timber sale transactions. Forest Service policy is to establish advertised rates that are within 70 percent of high bid rates received over the previous four calendar quarters on a weighted volume basis (FSM 2422.1). Appraisal performance monitoring over the past several years has shown many areas across the country are routinely failing to meet this standard; primarily due to lack of competition and a decrease in the number of transactions. **Forest Management (FM) is now working with Research and Development (R&D) on a project to address shortfalls in the current TEA appraisal system.**

Objective – Develop Appraisal Method That Meets These Criteria:

- National in scope yet flexible enough to address factors specific to individual appraisal zones.
- Relies on data readily available in the public sector - easily verifiable, dependable and represents a savings compared to the current source.
- Appraisal and associated variables easy to understand and operate.
- Variables have a "real world" basis in affecting fair market value (e.g. logging conditions) – not a statistical artifact.
- Capable of rapidly responding to changing conditions (e.g. fuel prices/markets).
- Is transparent – does not rely on equations or calculations running in the background.
- Able to provide fair market value for relatively new products (e.g., biomass) and those with minimal past sale transactions.
- Can be used for both timber sales and stewardship projects.
- Has the ability to calculate rate redeterminations.
- Appraisal can be produced in Timber Information Manager (TIM).

On the Horizon

Extending The Use of Designation by Prescription to Regular Timber Sales

by Carl Maass, Contract Specialist, FMSC and Mike Shettles, Forest Biometrician, FMSC

The 2014 Farm Bill authorized Designation by Prescription (DxP) as a valid method for designating timber in timber sales authorized under NFMA. Originally this authority was limited to stewardship contracts where the NFMA requirement for designation by an employee of the Forest Service with no personal interest in the purchase or harvest and not in employment of the purchaser was waived by stewardship legislation. But under NFMA, all timber sales are required to have the timber designation overseen by Forest Service employees. Further, managers in the field have begun to interpret this new 2014 Farm Bill legislative authority as clearance for use in regular timber sales with higher-value larger-diameter material, with complex restoration-based prescriptions, making it increasingly imperative there is accountability for the timber designation.

DxP marking guides are primarily based upon subjective stand-level metrics such as "retain 60% of pre-thinning canopy cover". This can be next to impossible to verify by randomly selecting post-cutting verification sample plots. For example: What *was* the average pre-cutting canopy cover % for those *particular* verification plots that were randomly selected? That is typically unknown. With no current sampling error standards in place for situations where they may be discrepancies, the results of these verification plots can easily be disputed. And even if these metrics were easily verifiable, what do you do if the purchaser isn't in compliance? Inspection can't be done until the cutting is complete because they are typically stand-level metrics that guide the cut-tree selection (the whole stand must be treated to quantify them), so at that point it would be too late to correct.

Timber Tips

Timber Tip: Sale Prep: Use DxP when no DxD, ITM or area based designation seems to work effectively or efficiently. Keep the prescriptions short, and limit the selection criteria to 2 or 3 factors if possible. Remember the person in the feller-buncher makes about a hundred decisions to cut or leave trees every minute, and the field of view from the driver's seat is only about 30 degrees wide. Use at least one criteria that can be identified from the stump, after the tree is removed.

Timber Tip: Sale Administration and Prep: You have to inspect DxP to verify compliance. Make it easy on yourself by making the selection criteria in the contract as simple as possible and get those criteria into the contract! Limit decision criteria to no more than 3 factors if possible. More complex criteria leads to contract disputes and if the criteria isn't clear, the Purchaser or Contractor will win a dispute in court.

Timber Tip: Cruise DxP the same way you expect it to be cut.

The Cold Deck…Stacking Tips for Future Utilization

Please forward ideas, tips and success stories for future utilization to Mike Shettles at michaelashettles@fs.fed.us or to the following physical address:

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Fort Collins, CO 80526-1891

Parting Safety Message

Eye Protection

Shawn B. Wise, Mt. Baker-Snoqualmie NF, R6 submits this striking safety message from an anonymous former co-worker of theirs:

"The short summary below is from a recent incident that occurred to one of the employees where I worked prior to the MBS. The aviation ground safety manager shared this with me. It is a great example that PPE works and that you should use it beyond the workplace. This person still has the use of his right eye today because of his decision to wear PPE at home!

"….So the story is, I was cutting some reclaimed lumber and after I checked it for all nails, screws and such... I failed to see a chunk of a snapped Lag bolt. Then while using my Miter Saw it balked and one of the carbide tips shot out and hit me in the right lens of my safety glasses."" The associated photos should hammer home the point intended.

WORKING SAFELY MAY GET OLD BUT SO DO THOSE WHO PRACTICE IT